module. In some implementations, the electric charge may be varied on a series of elements, facilitating movement of a liquid held within the cavity. Additionally, the acoustic module, which may include a speaker mechanism, may be configured to produce acoustic waves that also facilitate expulsion of liquid from the acoustic module.

[0019] Additionally, in some cases, an acoustic sensor (e.g., a microphone) may be used to detect the presence of liquid or quantify the amount of liquid in the acoustic cavity. For example, an acoustic module may generate a calibrated tone or stimulus that results in an acoustic signal that is received by the acoustic sensor. The presence of liquid and/or the amount of liquid may be determined based on the acoustic signal received by the acoustic sensor. In some cases, additional liquid expulsion operations may be performed in response to this determination.

[0020] FIGS. **1**A-B depict an example device **100** including an acoustic module. In this example, the device **100** is a mobile telephone having a touch screen display **110**. The touch screen display **110** is an interface for the user to provide input to the device as well as present visual output to the user. In this example, the device **100** also includes interface buttons **112** for providing additional input to the device **100**.

[0021] As shown in FIGS. **1**A-B, the device **100** includes a housing **101** used to protect the internal components of the device **100**. The housing **101** may be formed from a substantially rigid shell structure that serves as the mechanical support for various components of the device **100**, including the touch screen display **110**, the interface buttons **112**, and one or more acoustic modules (depicted in FIG. **2**).

[0022] As shown in FIGS. **1**A-B, the housing **101** includes a first acoustic port **120** that is coupled to a speaker acoustic module. In this example, the speaker acoustic module is configured to function as an earpiece or speaker for the mobile telephone. An example acoustic module **303** is provided in FIGS. **3**A-B depicting a cross-sectional view of a speaker acoustic module taken along section A-A of FIG. **1**A. The first acoustic port **120** includes an opening that facilitates the transmission of audible signals from the speaker to the user's ear. In this example, the acoustic port includes an orifice **116** through the housing **101** that connect internal components of the acoustic module with the external environment. In other examples, a single acoustic port may include multiple orifices. As described in more detail with respect to FIG. **3**, the first acoustic port **120** may also include a screen mesh or other protective element configured to inhibit ingress of liquid or other foreign matter. The housing **101** also includes a second acoustic port **130** that is coupled to a microphone acoustic module that is configured to function as a mouthpiece or microphone for the mobile telephone. The second acoustic port **130** also includes one or more openings or orifices to facilitate the transmission of sound from the user to the microphone acoustic module, which may include a screen mesh or protective element to inhibit ingress of liquid or other foreign matter.

[0023] In this example, the device **100** is a smart phone. However, it is understood that the device **100** depicted in FIGS. **1**A-B is simply one example and that other types of devices may include an acoustic module. Other types of devices include, without limitation, a laptop computer, a desktop computer, a cellular phone, a digital media player, a wearable device, a health-monitoring device, a tablet computer, a mobile computer, a telephone, and/or other electronic device.

[0024] FIG. **2** depicts a schematic diagram of example components of the device **100** that are located within the housing **101**. As shown in FIG. **2**, the device **100** may include one or more processing units **154**, one or more non-transitory storage media **152**, one or more speaker acoustic modules **121**, and/or one or more microphone acoustic modules **131**. In this example, the processing unit includes a computer processor that is configured to execute computer-readable instructions to perform one or more electronic device functions. The computer-readable instructions may be stored on the non-transitory storage media **152**, which may include, without limitation: a magnetic storage medium; optical storage medium; magneto-optical storage medium; read only memory; random access memory; erasable programmable memory; flash memory; and the like.

[0025] As shown in FIG. **2**, device **100** may also include two acoustic modules: a speaker acoustic module **121** and a microphone acoustic module **131**. The acoustic modules **121**, **131** are coupled to respective acoustic ports (items **120** and **130** of FIGS. **1**A-B). The acoustic modules **121**, **131** are configured to transmit and/or receive signals in response to a command or control signal provided by the processing unit **154**. In some cases, intermediate circuitry may facilitate the electrical interface between the processing unit **154** and the acoustic modules **121**, **131**.

[0026] Although FIG. **2** illustrates the device **100** as including particular components, this is provided only as an example. In various implementations, the device **100** may include additional components beyond those shown and/or may not include some components shown without departing from the scope of the present disclosure. For example, the device may include only one of a speaker acoustic module **121** and a microphone acoustic module **131**. Alternatively, the device may include additional acoustic modules or other types of acoustic modules

[0027] FIG. **3**A depicts a simplified schematic cross-sectional view of a first embodiment of a device having an acoustic module **303**. The cross-sectional view of FIG. **3**A is taken along section A-A of FIG. **1**A. The cross-sectional view of FIG. **3**A is not drawn to scale and may omit some elements for clarity. The acoustic module **303** may be, for example, a speaker acoustic module of an electronic device (See, e.g., item **121** of FIG. **2**). The electronic device may include a housing **301** in which the acoustic port **120** is formed. In the present example, the acoustic port includes a single passage or orifice **116** connecting the acoustic cavity **311** of the acoustic module **303** to an environment external to the electronic device. In other examples, a single port may include multiple orifices. A screen element **315** may separate the acoustic cavity from the external environment and may impede the ingress of liquids or other foreign material from the external environment into the acoustic module **303**.

[0028] In the present example depicted in FIG. **3**A, the acoustic module **303** is a speaker module. As shown in FIG. **3**A, a speaker acoustic module includes various components for producing and transmitting sound, including a diaphragm **310**, a voice coil **309**, a center magnet **308**, and side magnets/coils **307**. In a typical implementation, the diaphragm **310** is configured to produce sound waves or an acoustic signal in response to a stimulus signal in the voice coil **309**. That is, a modulated stimulus signal in the voice coil **309** causes movement of the center magnet **308**, which is coupled to the diaphragm **310**. Movement of the diaphragm **310** creates the sound waves, which propagate through the acoustic cavity